

Appl. No. 10/522,708
Amendment dated December 5, 2008
Reply to Office Action of August 8, 2008

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include fifty four (54) sheets of replacement drawings, including Figures 1-54. These sheets, which include Figures 1-54, replace the original sheet including Figures 1-54.

Attachment: fifty four (54) replacement sheets

REMARKS

In the August 8, 2008 Office Action, the drawings and title were objected to and claims 1-3, 6 and 9 stand rejected in view of prior art. On the other hand, claims 4, 5 and 7 were indicated as containing allowable subject matter. Applicant wishes to thank the Examiner for this indication of allowable subject matter and the thorough examination of this application. Claims 10-19 were withdrawn from consideration as being directed to a non-elected invention. No other objections or rejections were made in the Office Action.

Status of Claims and Amendments

In response to the August 8, 2008 Office Action, Applicant has amended claim 1, and cancelled claims 10-19 as indicated above. Thus, claims 1-9 are pending, with claim 1 being the only independent claim. Also, Applicant has amended the title, specification and drawings, as indicated above. Reexamination and reconsideration of the pending claims are respectfully requested in view of above amendments and the following comments.

Interview Summary

On October 29, 2008, the undersigned conducted a personal interview with Examiner Jeffrey L. Sterrett, who is in charge of the above-identified patent application. Applicant wishes to thank Examiner Sterrett for the opportunity to discuss the above-identified patent application during the Interview of October 29, 2008.

Basically, the undersigned proposed amending independent claim 1 to require one phase of the multiple phase converter consisting only of said first diode and said second diode. Examiner Sterrett indicated that such an Amendment most likely raises new issues, which would require further consideration and/or search, but that the proposed Amendment could be discussed nonetheless. Thus, Applicant is filing herewith a Request for Continued Examination (RCE) herewith.

The undersigned then argued that when adopting a transistor as a commutation element of a converter, a person of ordinary skill in the art generally constructs all the phases with transistors. A converter described in Japanese patent application laid-open No. 10-225138 is an example. Also, when adopting a diode as a commutation element, a person of ordinary skill in the art generally constructs all the phases with diodes. A known diode

rectifying circuit is an example. A converter consisting of a switching element capable of taking two states of conducting and non-conducting states is able to control a voltage of DC link part. Furthermore, appropriate control of the switching element can bring wave form of input current input to a converter close to a sine wave. However, switching loss is relatively great because all the phases consist of switching elements. Since AC voltage is converted to DC voltage by self commutation in a diode rectifying circuit, it is impossible to control voltage of DC link part and control wave form of input current to become close to sine wave. However, switching loss is not caused because it does not have a switching element.

On the other hand, with the arrangement proposed for independent claim 1 of the present application, one phase consists of a diode and another phase consists of a switching part. Therefore, it is capable of reducing the switching loss by reducing the total number of switching elements, as recited in page 41, lines 14-17 of the of the specification, while capable of controlling AC voltage between DC power lines and controlling wave form of input current to become close to sine wave.

As stated above, while all the phases conventionally consist of switching elements or diodes, the arrangement proposed for independent claim 1 of the present application produces the above effect by constructing one phase with a switching part and another phase with a diode. The cited reference neither describes nor suggests the technical idea of constructing one phase with a switching part and another phase with a diode, and it is disclosed for the first time in the present application. Therefore, the invention set forth in Claim 1 of the present application is not obvious over the cited references. Agreement was reached as set forth in the Examiner's Interview Summary.

In response, Applicant has amended independent claim 1 to require at least one phase of the multiple phase converter consisting only of said first diode and said second diode. Also, in response, Applicant files herewith replacement drawings, which Applicant has modified in accordance with the Examiner's instructions, to remove cross-hatching, label parts with words instead of mere reference numerals, etc. Figures 1, 20, 28 and 29 show the arrangement of amended independent claim 1, for example.

Drawings

In paragraph 2 of the Office Action, the drawings were objected to as failing to comply with 37 CFR §1.121(d). Specifically, Figures, 2, 4-12, 5-20, 23-31, 33, 34, 36-40,

43-47 49-54 were objected to because all boxes are not labeled as to their use or purpose. Additionally, during the Interview, Examiner Sterrett suggested labeling items in Figure 2 with words instead of reference numerals so the parts can be easily known without referencing the specification. In response, Applicant has filed the replacement drawings with changes to Figures 2-54, as suggested by the Office Action and the Examiner during the Interview. Specifically, reference numerals have been replaced by worded descriptions in Figure 2, cross-hatching has been removed from all Figures, black rectangles have been replaced with appropriate electrical signals in all Figures, additional worded descriptions have been added to Figures as appropriate, etc. No new matter is added by the attached drawing changes. Applicant believes that the drawings now comply with 37 CFR §1.121(d). Accordingly, Applicant respectfully requests withdrawal of the drawing objections.

Title

In paragraph 1 of the Office Action, Office Action indicates that the title is not descriptive. In response, Applicant has amended the title to more closely correspond to the claims. A Supplemental Application Data Sheet (ADS) is filed herewith to make this change in the U.S.P.T.O. computer systems. Applicant has not followed the suggestion of the Office Action exactly, but rather amended the title to correspond to the preamble of independent claim 1. Applicant believes the title is now

Specification

Applicant has amended the specification in view of the changes to Figure 2. Specifically, since the reference numerals in paragraph [0005] have been removed from Figure 2, these reference numerals have been deleted in the specification.

Rejections - 35 U.S.C. § 102

In paragraphs 4-8 of the Office Action, claims 10-19 were withdrawn from consideration as being directed to a non-elected invention and claims 1, 2, 6 and 9 stand rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Patent Publication No. 10-225138 (Suzuki). Claims 1-3, 6 and 9 also stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0034089 (Mori et al.). In

response, Applicant has amended independent claim 1 to more clearly define the present invention over the prior art of record.

In particular, independent claim 1 requires a multiple-phase converter including a first diode having its anode connected to one of said input ends and its cathode connected to said first direct-current power line, a second diode having its anode connected to said second direct-current power line and its cathode connected to said one of said input ends connected to the anode of said first diode, and a switching part selectively connecting another one of said input ends to either said first direct-current power line or said second direct-current power line, at least one phase of the multiple phase converter consisting only of said first diode and said second diode. Clearly, this structure is *not* disclosed or suggested by the Suzuki publication, Mori et al. publication or any other prior art of record.

Specifically, as explained in the Interview Summary above, neither the Suzuki publication nor the Mori et al. publication discloses or suggests one phase that's consists of a diode and another phase consists of a switching part. It is well settled under U.S. patent law that for a reference to anticipate a claim, the reference must disclose each and every element of the claim within the reference. Therefore, Applicant respectfully submits that claim 1, as now amended, is not anticipated by the prior art of record. Withdrawal of this rejection is respectfully requested.

Moreover, Applicant believes that dependent claims 2, 3, 6 and 9 are also allowable over the prior art of record in that they depend from independent claim 1, and therefore are allowable for the reasons stated above. Also, dependent claims 2, 3, 6 and 9 are further allowable because they include additional limitations. Thus, Applicant believes that since the prior art of record does not anticipate the independent claim 1, neither does the prior art anticipate the dependent claims. Applicant respectfully requests withdrawal of the rejections.

Allowable Subject Matter

In paragraph 8 of the Office Action, claims 4, 5, 7 and 8 were indicated as containing allowable subject matter. Applicant wishes to thank the Examiner for this indication of allowable subject matter and the thorough examination of this application. In response, Applicant has not amended these claims into independent form. However, Applicant believes these claims are now allowable because claim is now believed to be allowable, and thus, claims 4, 5, 7 and 8 no longer depend from a rejected base claim.

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In view of the foregoing amendment and comments, Applicant respectfully asserts that claims 1-9 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested. If there are any questions regarding this Amendment, please feel free to contact the undersigned.

Respectfully submitted,

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